Vikram R.

Github
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Education

University of Illinois at Urbana-Champaign (UIUC) Aug. 2022 – May 2024
MS. Computer Science - Computational Biology *Champaign, IL*

University of Illinois at Urbana-Champaign Aug. 2019 – May 2022
BS. Mathematics and Computer Science, Magna Cum Laude *Champaign, IL*

- **Achievements**: Top 10 projects HackIllinois 2021, Deans List 2019
- **CS Course Work**: Adv. Algorithms, Deep Learning, Web Programming, Database Systems,
- **Math Course Work**: Scientific Computing, Partial Differential Equations

Work Experience

Uhnder Inc. Apr. 2022 – Present
Research and Development Intern *Champaign, IL*

- Object detection for self driving cars: Trained **2D U-Net** on 2D rectangular projections of spherical radar data (r, theta, phi) to perform **Semantic Segmentation**. Improved mean IoU by 30% since initial segmentation model's implementation. **Gitlab, Python: Pytorch/MMSegmentation, AWS S3**
- Built methods to validate effectiveness of various self driving car simulator versions: Created methods that used **Wasserstein Distance (EMD)** to compare simulated and real radar images, as well as older and newer simulator generated images. **C++: Catch2/CARLA (Unreal Engine)**

HBO Max (Warner Bros. Discovery) Jan. 2022 – Apr. 2022
SWE Intern – Data *Culver City, CA*

- Designed, implemented and productionalized method to identify potential international pricing abusers of the streaming service. **SQL/Python**
- Built a scheme to auto-generate the list using an orchestrator **Airflow, Snowflake**

Human Factors and Aging Laboratory, UIUC Jul. 2020 – May 2022
Undergraduate Research Assistant *Urbana, IL*

- Designed an Amazon Alexa Skill for instructional support and app recommendation for older adults with/without mobility disabilities. **Node.js/AWS Lambda**. (Source Code)
- Researched in Human Factors, prototyped and optimized usability heuristics of the voice/visual interface
- Design of a **Project Management pipeline** with a **Kanban board** and a **Wiki** to monitor and document all development and testing processes of the Alexa application.

Exelon Aug. 2021 – Dec. 2021
SWE Co-Op *Chicago, IL*

- Built an application to run statistical analysis of simulations based on the reactor design. **Python: Tkinter/Matplotlib/Pandas**
- Reduced analysis time from a week's worth of manual effort to about an hour for over 99% improvement in work efficiency.

Inprentus Jun. 2018 – May 2019
Research and Development Intern *Champaign, IL*

- Built an application to automatically generate precise statistical product reports from Atomic Force Microscopy (AFM) images of diffraction gratings. Recipients of these reports included NASA and SLAC (Stanford). **Python: Matplotlib/PyGTK**
- Created macros to identify components of Scanning Electron Microscope (SEM) images of indentation tools. **ImageJ, Java**
- Material indentation simulations in a joint project with UC Berkeley. **Mathematica**

Projects

- **User-Friendly Class Registration System:** Won top 7 in a University Full-Stack contest of roughly 50 teams. User-friendly upgrade to UIUC's class registration system with a **REST API** in the back-end, and a thoroughly UI-prototyped front-end. **Gitlab, JavaScript: React/Express/MongoDB, Miro** (Source Code)
- **Cyclicity Analysis on COVID in North America**: Cyclicity analysis is the technique of aggregating regional linear time series to map spread of a signal over a medium. Using American and Canadian provincial COVID case time series, spread is mapped across North America. **Python: Pandas/Matplotlib/Jupyter Notebook**

Technical Skills

Programming Languages:	Python, JavaScript, C/C++, Shell, Java
Data Analytics:	R, MATLAB, NumPy/SciPy/Matplotlib
Front End:	React, HTML, CSS, BootStrap, JQuery
Back End:	Django, Node.js, Express.js
Databases/Pipelining:	SQL, MongoDB, Neo4j, Snowflake, Airflow
Machine Learning:	PyTorch, Tensorflow, OpenCV
AWS:	S3, EC2, Lambda